

**WHAT IS CLAIMED IS:**

1           1.       A method of logging in a device to a network of devices, comprising  
2   the steps of:  
3           storing, in each device, an identification number unique to that device, the  
4   identification number having a number of bits, each having a bit position;  
5           delivering a control code to each device on the network indicating that a  
6   login process is to begin;  
7           broadcasting a pattern of requests to all devices, each request  
8   representing a request to each device to acknowledge whether a given bit  
9   position of its identification number has a given binary value;  
10          receiving acknowledgements from the devices; and  
11          traversing a binary tree in response to acknowledgements, thereby  
12   determining the identification number of the device.

1           2.       The method of Claim 1, wherein the network is a wireless network  
2   and the broadcasting and receiving steps are performed with wireless signals.

1           3.     The method of Claim 1, wherein the network is a network of  
2     calculators.

1           4.     The method of Claim 1, wherein the network is a local area network  
2     of computers.

1           5.     The method of Claim 1, wherein the method is performed by a  
2     hardware logic device.

1           6.     The method of Claim 1, wherein the method is performed by a  
2     processor-based device.

1           7.     The method of Claim 1, wherein the first request is a request to  
2     acknowledge a one rather than a zero, and wherein the second request is a  
3     request to acknowledge a zero rather than a one.

1           8.     The method of Claim 1, wherein the acknowledgement is any signal  
2     above a noise threshold.

1           9.     The method of Claim 1, further comprising the step of maintaining a  
2 tracking register associated with each device to track acknowledgements.

1           10.    The method of Claim 1, wherein each device ceases to send  
2 acknowledgements for subsequent bit positions after it cannot acknowledgement  
3 with respect to any bit position.

1           11.    The method of Claim 1, further comprising the step of ending the  
2 login process if two successive requests for values of the same bit position are  
3 not acknowledged.

1           12.    A method of logging in a device to a network of devices, comprising  
2    the steps of:

3           storing, in each device, an identification number unique to that device, the  
4    identification number having a number of bits, each having a bit position;

5           delivering a control code to each device on the network indicating that a  
6    login process is to begin;

7           broadcasting a first request to all devices, the first request representing a  
8    request to each device to acknowledge whether the first bit position of its  
9    identification number has a zero;

10          receiving acknowledgements from the devices in accordance with the  
11    following steps:

12          if an acknowledgement to the first request is received, repeating the  
13    broadcasting step for the next bit position of the identification number;

14          if no acknowledgement to the first request is received broadcasting a  
15    second request to all devices, the second request representing a request to each  
16    device to acknowledge whether the first bit of its identification number is a one;  
17    and if an acknowledgement to the second request is received, repeating the first  
18    broadcasting step for the next bit position of the identification number; and if no  
19    acknowledgement to the second request is received, ending the login process;

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20 repeating the broadcasting and receiving steps for each bit position of the  
21 identification number; and  
22 traversing a binary tree in response to acknowledgements, thereby  
23 determining the identification number of the device.

1 13. A network controller for login in a device to a network of devices,  
2 comprising:

3 processing circuitry for performing the following tasks:

4 delivering a control code to each device on the network indicated that a  
5 login process is to begin;

6 broadcasting a pattern of requests to all devices, each request  
7 representing a request to each device to acknowledge whether a given first bit  
8 position of its identification number has a given binary value;

9 receiving acknowledgements from the devices; and

10 traversing a binary tree in response to acknowledgements, thereby  
11 determining the identification number of the device.

1           14.    The controller of Claim 13, wherein the processing circuitry is a  
2   programmable logic device.

1           15.    The controller of Claim 13, wherein the processing circuitry is a  
2   processor and program memory.

1           16.    The controller of Claim 13, wherein the network is a local area  
2   network of computers, and the controller is part of a network server.

1           17.    The controller of Claim 13, wherein the network is a network of  
2   calculators, and the controller is a hardware communications controller.